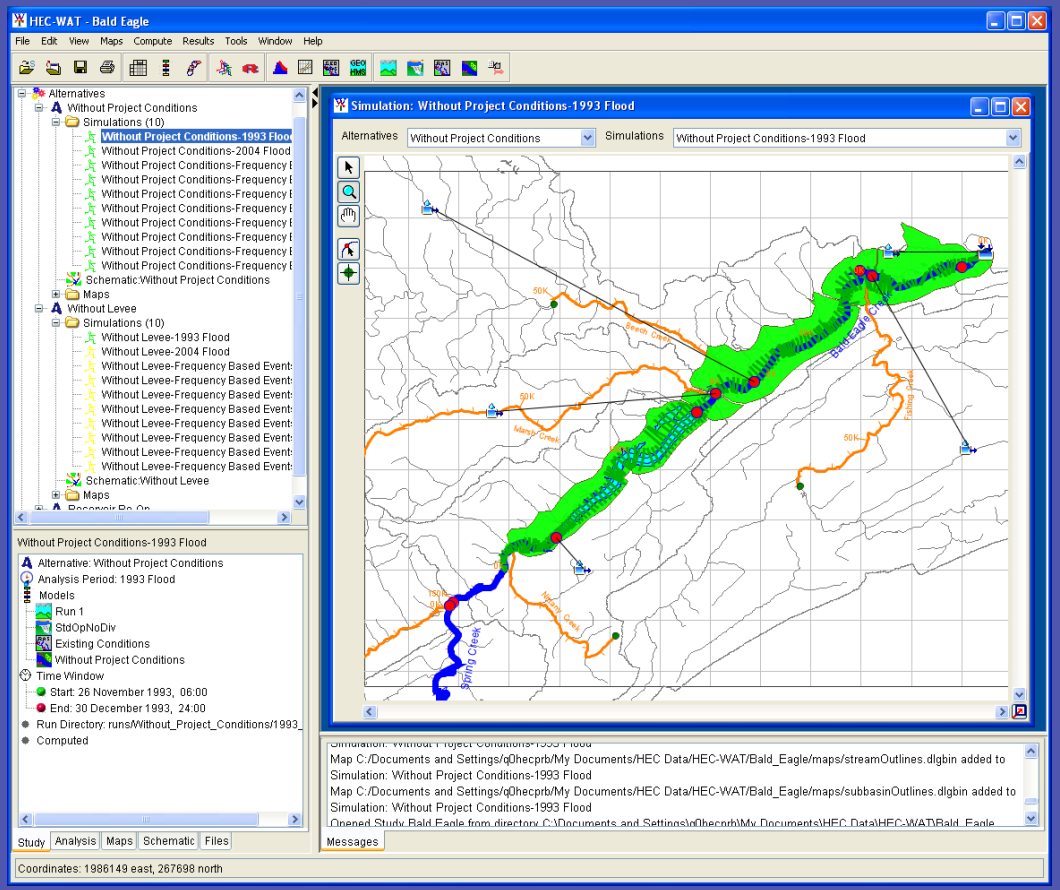
New Tool for Watershed Analysis – HEC-WAT

HEC-WAT - Defined

- Is an interface that streamlines and integrates the analytical process of water resource studies using the tools commonly applied by multi-disciplinary teams.



HEC-WAT - Defined

- Help Corps offices and study partners perform all types of studies including comprehensive watershed studies and small CAP studies in an integrated fashion.
- Modeling teams benefit because they can develop their models in a coordinated manner, can track progress of other models involved in a study, and be able to review results in a more efficient and coordinated environment.
- Management teams will benefit by having a common interface that will allow tracking of study status through each modeling component and provide ease of displaying results during public and study status meetings.

Why Develop HEC-WAT?

- USACE guidance stresses the need for integrated water resources management, systems approach, and collaborative analyses.
  - ER 1105-2-100 – Planning Guidance Notebook
  - EC 1105-2-409 – Planning in a Collaborative Environment
  - Actions of Change
- HEC-WAT is a tool that addresses the Corps guidance for watershed analysis.

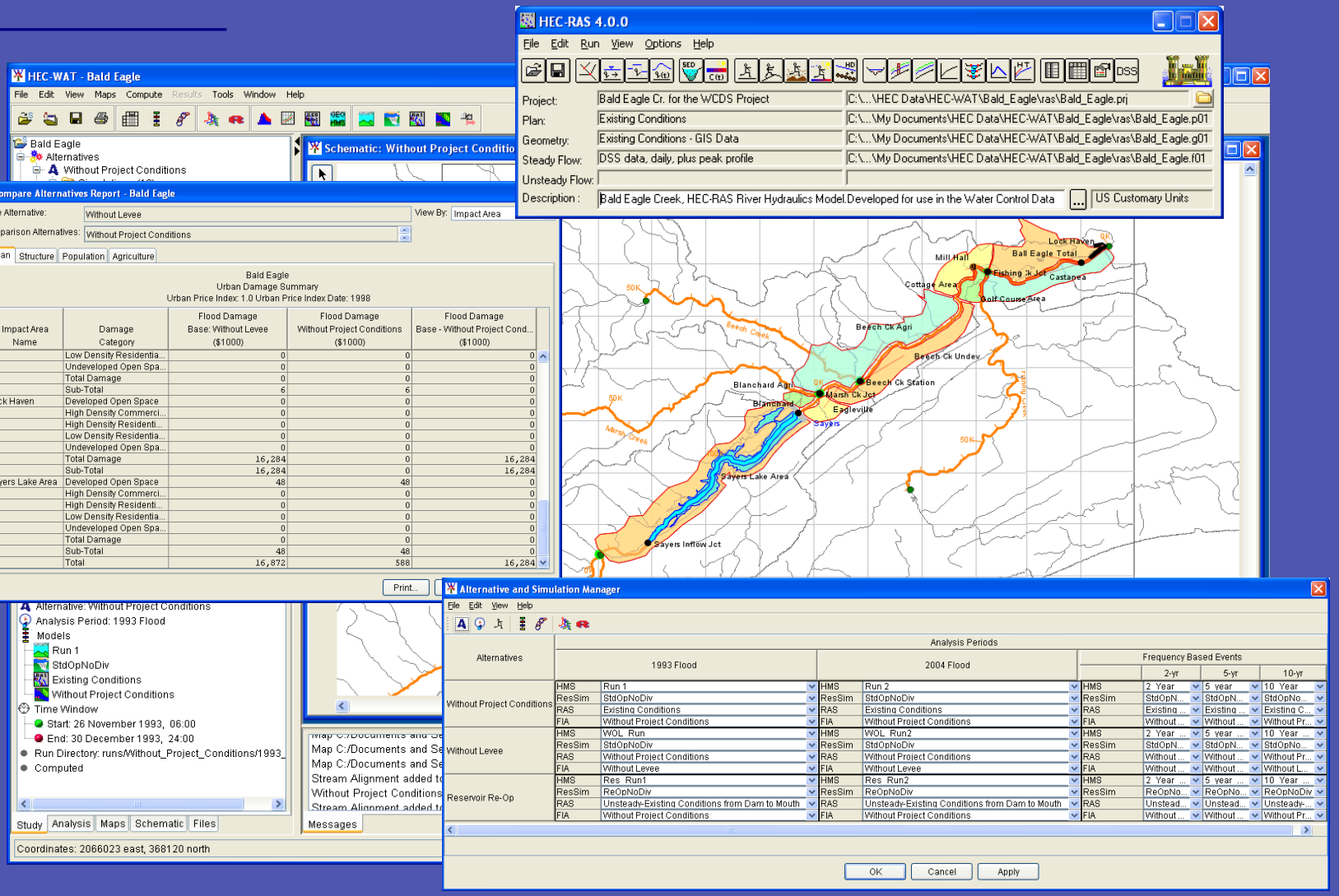
Why Develop HEC-WAT?

- HEC-WAT will help perform comprehensive water resources studies by creating procedures and capabilities that allow integrated modeling.
- HEC-WAT will allow project delivery teams (PDT) the ability to perform coordinated and efficient modeling and alternative analyses.

HEC-WAT Framework

- Develop a spatially correct representation (schematic) of the study area.
- Organize and develop alternatives
- Access software (i.e., HEC-HMS, HEC-RAS, HEC-ResSim, HEC-FIA, … etc.)
- View and compare alternative results

HEC-WAT Framework

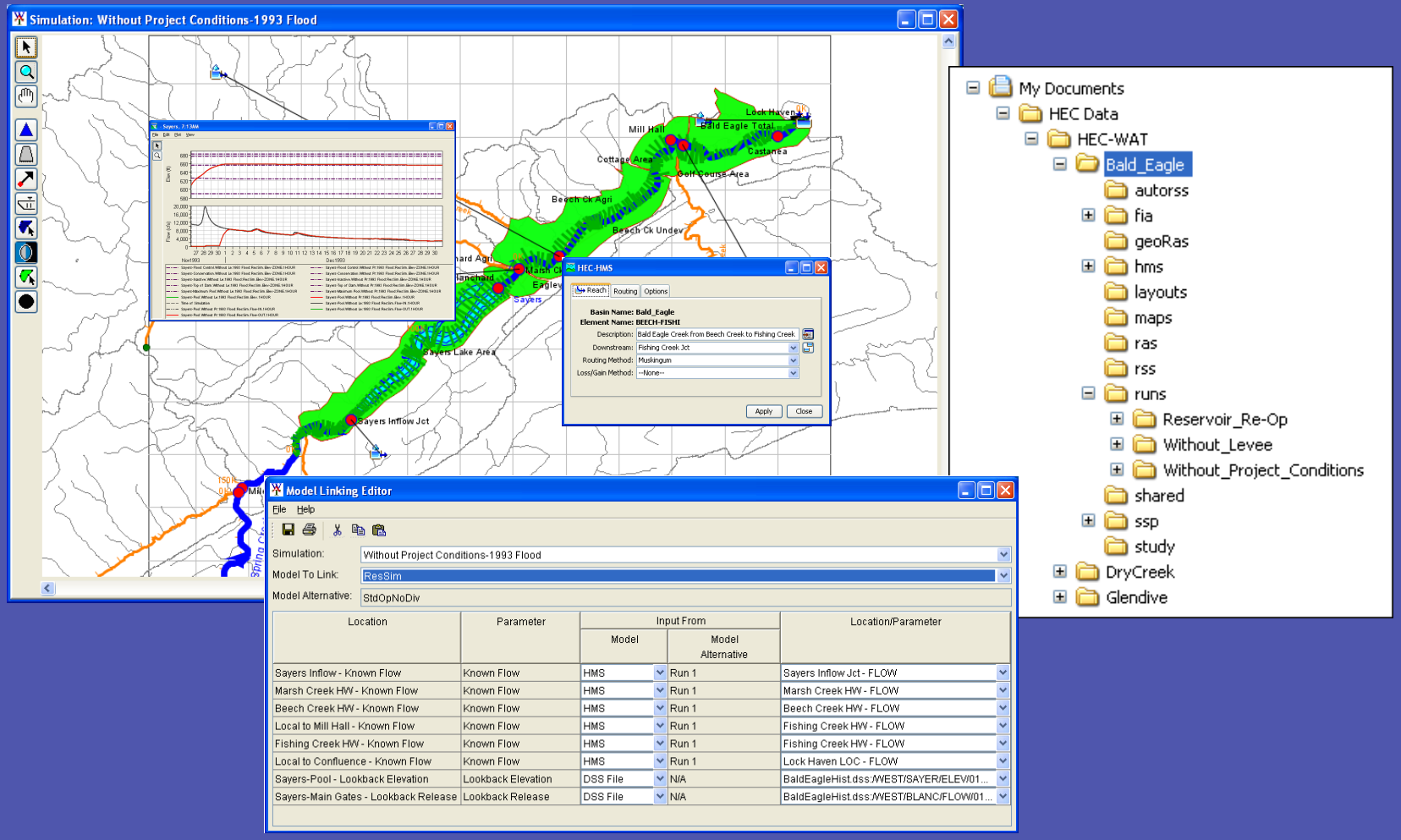


USACE
CEIWR-HEC

HEC-WAT Innovations

- HEC-WAT provides an enhanced shared schematic that allows editing of model data and review of model results.
- Complete repository of modeling data & results for a study.
- Ease of linking models involved in the study.
- Ease of adding additional software to HEC-WAT through “plug-ins”.

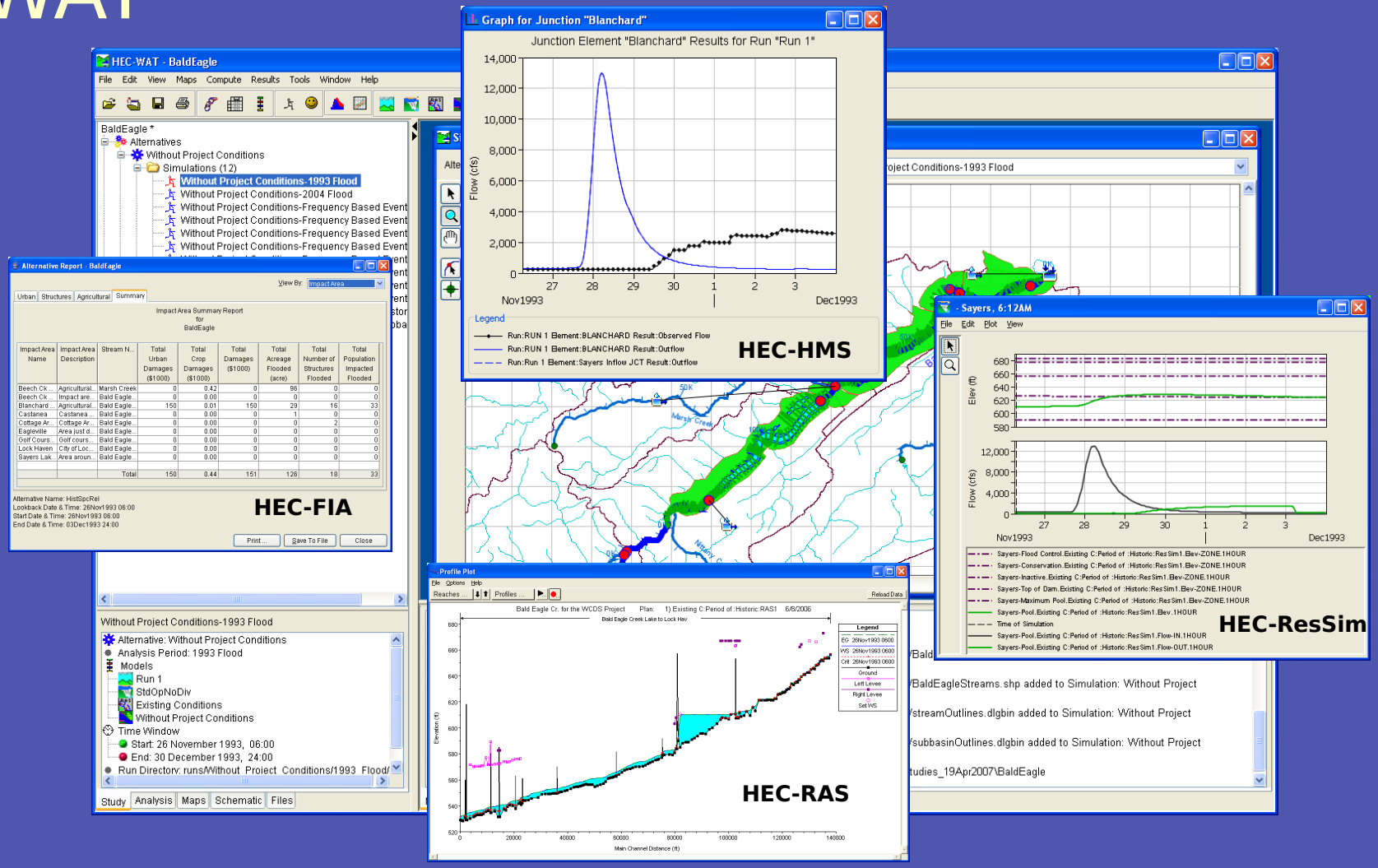
HEC-WAT Innovations


Simulation: Without Project Conditions-1993 Flood
Mill Hall
Bald Eagle Total
Lock Haven
Castanea
Cottage Area
Golf Course Area
Beech Ck Agri
Beech Ck Undev
Sayers Lake Area
Sayers Inflow Jct
HEC-HMS
Reach
Routing
Options
Basin Name: Bald_Eagle
Element Name: BEECH-FISHI
Description: Bald Eagle Creek from Beech Creek to Fishing Creek
Downstream: Fishing Creek Jct
Routing Method: Muskingum
Loss/Gain Method: --None--
Apply
Close
My Documents
HEC Data
HEC-WAT
Bald_Eagle
autorss
fia
geoRas
hms
layouts
maps
ras
rss
runs
Reservoir_Re-Op
Without_Levee
Without_Project_Conditions
shared
ssp
study
DryCreek
Glendive
Model Linking Editor
File
Help
Simulation: Without Project Conditions-1993 Flood
Model To Link: ResSim
Model Alternative: StdOpNoDiv
Location
Parameter
Input From
Model
Model Alternative
Location/Parameter
Sayers Inflow - Known Flow | Known Flow | HMS | Run 1 | Sayers Inflow Jct - FLOW
Marsh Creek HW - Known Flow | Known Flow | HMS | Run 1 | Marsh Creek HW - FLOW
Beech Creek HW - Known Flow | Known Flow | HMS | Run 1 | Beech Creek HW - FLOW
Local to Mill Hall - Known Flow | Known Flow | HMS | Run 1 | Fishing Creek HW - FLOW
Fishing Creek HW - Known Flow | Known Flow | HMS | Run 1 | Fishing Creek HW - FLOW
Local to Confluence - Known Flow | Known Flow | HMS | Run 1 | Lock Haven LOC - FLOW
Sayers-Pool - Lookback Elevation | Lookback Elevation | DSS File | N/A | BaldEagleHist.dss:/WEST/SAYER/ELEV/01...
Sayers-Main Gates - Lookback Release | Lookback Release | DSS File | N/A | BaldEagleHist.dss:/WEST/BLANC/FLOW/01...

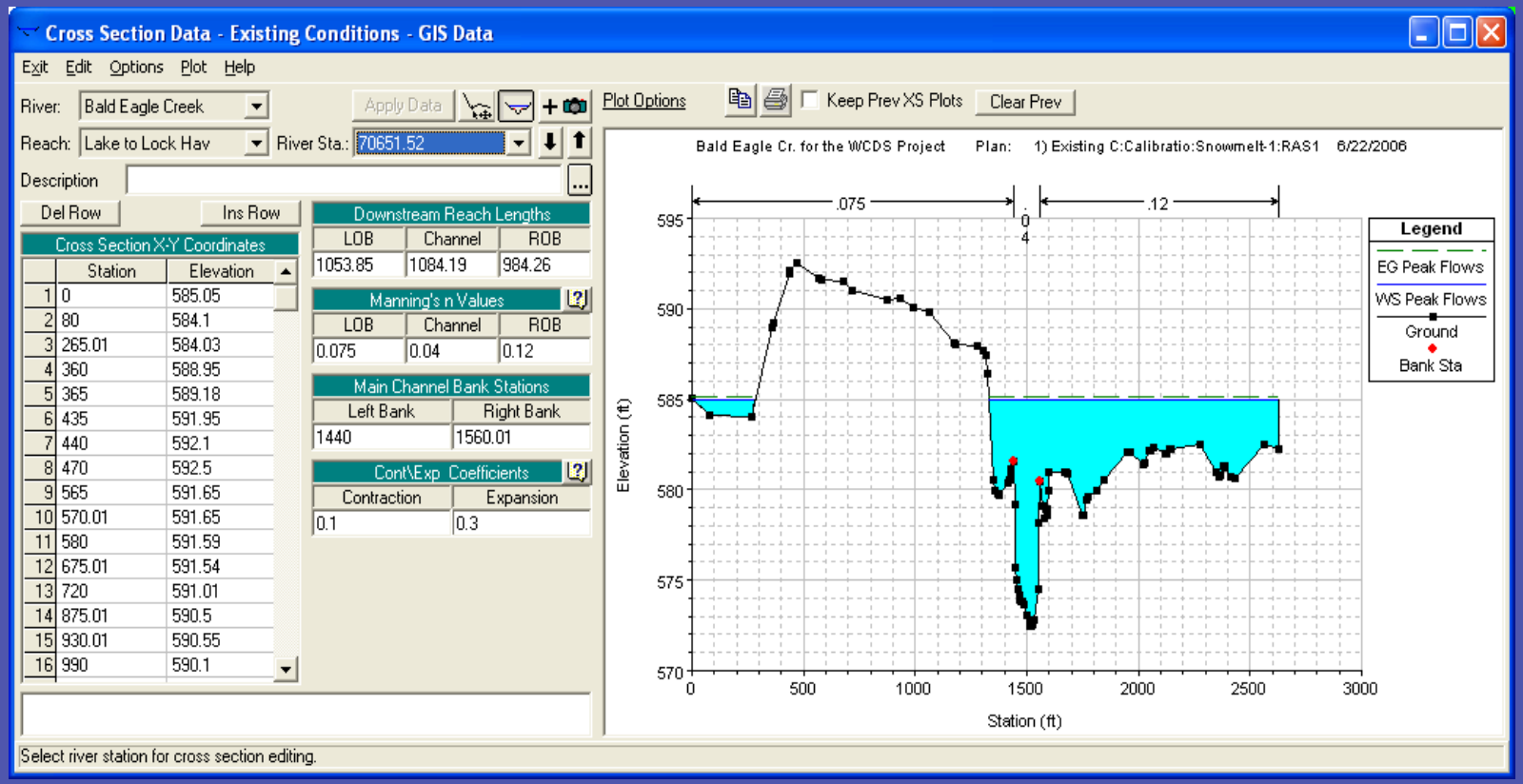
HEC-WAT Software Integration

- Software incorporated into the WAT use a “plug-in” concept to provide integrated software capability:
  - HEC-WAT provides the analysis framework, while the software provides everything else.
  - New software can be added without any change to the HEC-WAT software code.
  - A plug-in provides integrated schematic elements, access to native software editors and results, and the ability to launch software computations.

Individual Model Results in HEC-WAT



Work with Models Directly from HEC-WAT



HEC-WAT – Collaborative Planning

- The WAT provides the mechanism for the PDT to work in a team environment defining the study area. Since the study area can be viewed that was built by the PDT; trust, transparency, and technical merit have begun.
- Addresses how expert modelers can work with non-modelers in a collaborative planning process
- Reduces confusion on modeling data & results in a study. The PDT can conduct a study in an integrated fashion.

HEC-WAT – Systems Approach

- HEC-WAT helps users surpass individual project-level analysis, and apply current and improved applications for multidisciplinary system-wide assessments.
- HEC-WAT provides a framework that will provide the analytical tools to balance development activities with natural system requirements, achieve environmental sustainability, and restore and manage water resources.
- Meets Actions for Change

Key Takeaway Points

- HEC-WAT increases stakeholder collaboration and multi-disciplinary technical input during the course of a project.
- HEC-WAT meets the Corps need for an integration tool that performs alternative analysis across disciplines.
- HEC-WAT will facilitate the development of uncertainty data for studies, assisting with the risk analysis process.

Key Takeaway Points

- HEC-WAT encourages planners to think about water resources management in the context of a large system which facilities collaboration and systems approach.
- Currently fielding comments from Beta testers, hope to have Version 1.0 released at end of FY2008.